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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,172	01/17/2006	Christian Block	14219-073US1	5286

26161 7590 08/11/2006

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EXAMINER

LU, ZHIYU

ART UNIT	PAPER NUMBER
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2618

DATE MAILED: 08/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Heinonen (US Patent#5896562).

Regarding claim 1, Heinonen anticipates a circuit arrangement for use with a mobile telephone, the circuit arrangement comprising a transmitting circuit, the transmitting circuit comprising:

- a first signal line that corresponds to a first frequency band (DCS, TXC1 of Fig. 3);
- a second signal line that corresponds to a second frequency band (GSM, TXC2 of Fig. 3);
- a switch (380 of Fig. 3) that connects an antenna to one of the first and second signal lines;
- a first amplifier (370 of Fig. 3) in series with the first signal line;
- a second amplifier (390 of Fig. 3) in series with the second signal line;
- a first band-pass filter (372 of Fig. 3) between the first amplifier and the switch, the first band-pass filter having a frequency range that corresponds to the first frequency band (column 6 lines 1-12); and
- a second band-pass filter (392 of Fig. 3) between the second amplifier and the switch, the second band-pass filter having a frequency range that corresponds to the second frequency band (column 6 lines 13-28).

Art Unit: 2618

Regarding claim 8, Heinonen anticipates the limitation of claim 1.

Heinonen also anticipates the first and second band-pass filters have attenuation curves that can be brought into approximate alignment by shifting along a frequency axis (inherent since both filters are for transmitting portion with respect to different frequencies).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Imai et al. (US2003/0022638).

Regarding claim 2, Heinonen teaches the limitation of claim 1.

Heinonen further comprising a receiving circuit, the receiving circuit comprising:

a third signal line (RXC1 of Fig. 3) that corresponds to a third frequency band; and

a third band-pass filter (306 of Fig. 3) in series with the third signal line.

But, Heinonen does not expressly disclose wherein the circuit arrangement further comprises an insulator between the transmitting circuit and the receiving circuit.

Imai et al. teach circuit arrangement further comprises an insulator between the transmitting circuit and the receiving circuit (abstract, paragraphs 0002-0003, 0014, 0019).

Art Unit: 2618

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate insulator between transmitting circuit and receiving circuit taught by Imai et al. into the circuit arrangement of Heinonen, in order prevent signal interference between transmitting circuit and receiving circuit.

3. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Hagstrom (US Patent#5903820).

Regarding claim 3, Heinonen teaches the limitation of claim 1.

But, Heinonen does not expressly disclose the first and second band-pass filters comprise ceramic filters.

Hagstrom teaches using ceramic filters (column 9 lines 18-37).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate using ceramic filter taught by Hagstrom into the circuit arrangement of Heinonen, in order to be suitable for application usage.

Regarding claim 4, Heinonen and Hagstrom teach the limitation of claim 3.

Hagstrom also teaches having ground plane in multichip-module (column 13 lines 7-15), which it would have been obvious to one of ordinary skill in the art to recognize sheet metal (ground plane) on which the first and second band-pass filters are mounted.

4. Claims 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Newell et al. (US Patent#5815804).

Art Unit: 2618

Regarding claim 5, Heinonen teaches the limitation of claim 1.

But, Heinonen does not expressly disclose further comprising passive components between the switch and the first and second band-pass filters, the passive components for adjusting impedance.

Newell et al. teach using transmission lines to adjust impedance between filters and switch (208 of Fig. 2, column 2 lines 41-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate transmission line taught by Newell et al. into between the switch and the first and second band-pass filters of circuit arrangement of Heinonen, in order to provide phase transmission.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Imai et al. (US2003/0022638) and Newell et al. (US Patent#5815804).

Regarding claim 6, Heinonen and Imai et al. teach the limitation of claim 2.

But, Heinonen and Imai et al. do not expressly disclose a passive component between the insulator and the third band-pass filter being for adjusting impedance.

Newell et al. teach using transmission lines to adjust impedance between filters and switch (208 of Fig. 2, column 2 lines 41-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate transmission line for adjusting impedance taught by Newell et al. into the circuit arrangement of Heinonen and Imai et al., in order to provide phase transmission.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Imai et al. (US2003/0022638), Newell et al. (US Patent#5815804), and Hagstrom (US Patent#5903820).

Regarding claim 7, Heinonen and Imai et al. teach the limitation of claim 2.

But, Heinonen and Imai et al. do not expressly disclose the insulator, the switch and passive components comprise parts of a multilayer module.

Newell et al. teach using transmission lines to adjust impedance between filters and switch (208 of Fig. 2, column 2 lines 41-53) and multilayer module (column 3 lines 49-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate transmission lines taught and arranging circuit on multilayer taught by Newell et al. into the modified circuit arrangement of Heinonen and Imai et al., in order to provide phase transmission and increase chip performance and eliminate noise.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Weissman et al. (US2003/0050018).

Regarding claim 9, Heinonen teaches the limitation of claim 1.

But, Heinonen does not expressly disclose the first and second amplifiers have amplifications of less than 26dB.

Weissman et al. teach the first and second amplifiers have amplifications of less than 26dB (paragraph 0020).

Art Unit: 2618

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate amplifiers having amplifications of less than 26 dB taught by Weissman et al. into the circuit arrangement of Heinonen, in order to be suitable for application.

8. Claims 10 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Hagstrom (US Patent#5903820) and Newell et al. (US Patent#5815804).

Regarding claim 10, Heinonen teaches circuitry comprising:

- a transmitting portion (TXC1 or TXC2 of Fig. 3); and

- a receiving portion (RXC1 or RXC2 of Fig. 3);

- wherein the transmitting portion comprises plural signal lines, each of the plural signal lines for transmitting a signal in a different frequency band, each of the plural signal lines (TXC1 and TXC2 of Fig. 3) comprising, in order, a switch (380 of Fig. 3) for connecting an antenna (302 of Fig. 3) to a signal line (TXC1 or TXC2 of Fig. 3), a band-pass filter (372 or 392 of Fig. 3), an amplifier (370 or 390 of Fig. 3), and a band-pass filter (368 or 388 of Fig. 3); and

- wherein the transmitting portion comprises a signal line for receiving a signal from an external source, the signal line comprising a passive component, and a band-pass filter (as taught above).

But, Heinonen does not expressly disclose a passive component and the last band-pass filter being a surface wave filter.

Newell et al. teach using transmission lines to adjust impedance between filters and switch (208 of Fig. 2, column 2 lines 41-53).

Art Unit: 2618

Hagstrom teaches using surface wave filter in transceiver (Figs. 10 and 17, column 9 lines 18-37).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate passive component taught by Newell et al. and using surface wave filter taught by Hagstrom into the circuitry of Heinonen, in order to provide phase transmission and be suitable for application usage.

Regarding claim 12, Heinonen, Newell et al., and Hagstrom teach the limitation of claim 10.

Heinonen, Newell et al., and Hagstrom also teach passive components in the transmitting portion adjust an impedance between the switch and band-pass filters in the transmitting portion as explained in claim 10 above.

Regarding claim 13, Heinonen, Newell et al., and Hagstrom teach the limitation of claim 10.

Hagstrom also teaches the switch, and passive components of the transmitting portion and the receiving portion comprise part of a multilayer module (column 13, lines 7-15).

Regarding claim 14, Heinonen, Newell et al., and Hagstrom teach the limitation of claim 10.

Hagstrom also teaches the switch comprises at least one of a field effect transistor, diodes, and mechanical components (column 8 lines 20-39).

Art Unit: 2618

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (US Patent#5896562) in view of Hagstrom (US Patent#5903820), Newell et al. (US Patent#5815804), and Imai et al. (US2003/0022638).

Regarding claim 11, Heinonen, Newell et al., and Hagstrom teach the limitation of claim 10.

But, Heinonen, Newell et al., and Hagstrom do not expressly disclose further comprises an insulator between the transmitting circuit and the receiving circuit.

Imai et al. teach circuit arrangement further comprises an insulator between the transmitting circuit and the receiving circuit (abstract, paragraphs 0002-0003, 0014, 0019).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate insulator between transmitting circuit and receiving circuit taught by Imai et al. into the modified circuitry of Heinonen, Newell et al., and Hagstrom, in order prevent signal interference between transmitting circuit and receiving circuit.


Conclusion


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zhiyu Lu whose telephone number is (571) 272-2837. The examiner can normally be reached on Weekdays: 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vuong Quochien can be reached on (571) 272-7902. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2618

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Zhiyu Lu
August 4, 2006

 8/7/06
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PRIMARY EXAMINER